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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,066	08/24/2001	Joan LaVerne Mitchell	CHA920010012US1	4252

23550 7590 04/17/2007
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EXAMINER

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ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
2 MONTHS	04/17/2007	PAPER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/939,066
Filing Date: August 24, 2001
Appellant(s): MITCHELL ET AL.

MAILED
APR 17 2007
Technology Center 2600

David C. Goldman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/27/2006 appealing from the Office action mailed 5/24/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

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The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 2002/01022028	KELLER et al	8-2002
US 5,153,936	MORRIS et al.	10-1992
JP 09181892	Ishida	7-1997
US 5,970,176	TAKAYAMA	10-1999
US 2002/0003905	SATO et al.	1-2002
US 6,526,099	CHRISTOPOULOS et al.	2-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. Claims 1-4, 11-12, and 14-19, 30-36, 38-39, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Keller et al. (US patent application publication 2002/0102028 cited previously.)

a. For Claims 1-4, 11-12, and 14-19, Keller teaches a method for managing an image of an object stored in a database, the method comprising the steps of:

-- reducing a storage size of the image from a base level to at least one secondary level based on the reduction criteria, wherein each secondary level is smaller in storage size than the

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base level; (sections 0061-0065, 0077, 0092; Section 0064 teaches that "Accordingly, depending on the input modality 4 by which original image data was obtained, the part on which an examination was conducted or the method of examination, the compression ratio of irreversible compressed image data can be changed." Section 0092 further teaches that "Further, for cases in which image quality parameters and/or usage purpose parameters have been assigned to image data S, the version of the data group to be acquired can be specified according to the image quality parameter and/or usage purpose parameter.")

-- wherein the step of reducing includes replacing the image with a size-reduced image version, **such that the size-reduced image version is the only version of the image stored in the database;** (citation A: paragraph 0061, especially the last 8 lines; The passage explains that the original image is reversibly compressed and is replaced by the reversibly-compressed image. A reversibly compressed image has smaller size of data than the original image and is thus a size-reduced image version. Data S1 and S2 are also compressed. *The reversibly compressed image, image data S1, and S2 are all of a size-reduced image version. In one species of the embodiment, only the reversibly compressed image, image data S1, and S2 are stored in storage medium 11. The data stored in medium 11 form a set of database.* Therefore, Keller also teaches the newly added limitation -- the size-reduced image version is the only version of the image stored in the database.)

-- repeating the step of reducing to reduce the storage size of the **size-reduced** image from one secondary level to another secondary level based on the reduction criteria; (sections 0061-0065, 0071, 0078-0091; The server computer 13 creates at least two versions of secondary-level images. The compression is repeated at least twice. **In the situation that**

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reversibly compressed image replaces an original image, the further reduction in data size is done as compared with the reversibly compressed image.)

-- wherein the step of repeating occurs after expiration of a predetermined duration; (sections 0061-0065, 0070-0071; The reducing process includes a process of deleting the original image data S org from temporary medium 11 after a predetermined period and storing only S1 and S2. This is a storage-size reduction process.)

-- wherein the image is of a document; (section 0055; The images are medical images that are medical documents.)

-- wherein the image includes a plurality of images; (section 0092)

-- wherein the step of reducing includes compressing the image; (section 0061)

-- wherein an initial step of reducing includes deleting a portion of the image; (section 0061; Because S1 image is irreversibly compressed, portion of image data is deleted.)

-- wherein the reduction criteria includes at least one of: available data storage, time since object creation, time since object imaging, prior size reduction, prior access by user, object value, user account type, volume of objects per user account, user total account value, a user selection, user fees paid, user account history, suspicious activity and object part imaged; (sections 0084-0091; The size-reduction criteria includes information of the doctor or group of doctors using the images that is information of user selection.)

-- maintaining a copy of image at the base level; (section 0061 and claim 1; The original image is stored.)

-- replacing the image at the secondary level with a copy of the image at the base level when a user requests access to the copy of the image at the base level; (section 0080-0081; When

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a base-level image is requested, image data are progressively decompressed. In the decompressed process, the image at the last secondary level is replaced with the image at the base level.)

-- wherein the user includes an indication of the duration that the base level will be required when the user requests the copy of the image at the base level; (section 0071)

-- wherein a final step of reducing includes purging the image. (section 0071; At the end of a predetermined period, the original image data are deleted (purged).)

b. For Claims 30-36 and 38, Keller teaches a system for managing storage size of an image of an object where the image is accessed by a user online (Fig. 1), the system comprising:

-- a size-reduction evaluator to periodically evaluate whether the image is subject to a size reduction based on size-reduction criteria; (sections 0061-0065, 0071; The server 1 evaluates each input image and bases on at least criteria set forth in sections 0064 and 0071 to decide compression ratio and storage both influence the total image data size to be stored. The part of the server performing the evaluation is the evaluator. sections 0063-0064, 0077, 0092; Section 0064 teaches that "Accordingly, depending on the input modality 4 by which original image data *S* org was obtained, the part on which an examination was conducted or the method of examination, the compression ratio of irreversible compressed image data can be changed." Section 0092 further teaches that "Further, for cases in which image quality parameters and/or usage purpose parameters have been assigned to image data *S*, *the version of the data group to be acquired can be specified according to the image quality parameter and/or usage purpose parameter.*")

-- a size reducer to reduce the size of the image based on instructions from the size-reduction evaluator and to replace the image with a size-reduced image version, **such that the size-reduced image version is the only version of the image stored in the database;** (sections 0061-0065; The server 1 evaluates each input image and bases on at least criteria set forth in section 0064 to decide compression ratio. The part of the server performing the compression is the size reducer. **The passage, in paragraph 0061, especially the last 8 lines, explains that the original image is reversibly compressed and is replaced by the reversibly compressed image. A reversibly compressed image has smaller size of data than the original image and is thus a size-reduced image version. Also see citation A above.)**

-- a designator to assign the image a designation indicative of the status of the image based on the size-reduction criteria; (sections 0065-0066; At least there are three versions. The part of the server labeling the version is the designator.)

-- wherein the size-reduction criteria includes at least one of: prior size-reduction, prior access by user, object value, user account type, volume of objects in user account, user total account value, a user selection, user fee paid, user account history and object side imaged; (sections 0084-0091; The size-reduction criteria includes information of the doctor or group of doctors using the images that is information of user selection.)

-- wherein the size-reduction criteria includes real-time factors including at least one of: available data storage, suspicious activity, time since object creation and time since object imaging; (sections 0071, 0084-0091; The size-reduction criteria includes information of memory size of the computer that is information of available data storage. The image data S is deleted after a predetermined period of time.)

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-- a storage module to save a substantially lossless quality version of the image; (section 0061; Both original image data S org and reversible-compressed image data of S can be stored. Both have lossless quality.)

-- wherein the size-reduction evaluator determines whether to leave the image alone, reduce the storage size of the image or purge the image; (sections 0061-0065, 0071; claim 1)

-- wherein a first activation of the size reducer purges an image portion of the image; (sections 0061-0065, 0071; The irreversible compression deletes portions of image data thus purging an image portion of the image.)

-- wherein the size-reduction evaluator determines a reduction/purging rule to be followed by the size reducer based on the reduction criteria. (sections 0061-0065, 0071; See explanation above.)

c. The above-cited passages also teach the system of Claim 39.

d. With regard to Claim 41, Keller teaches that server computer 13 performs all the above-cited functions. Server computer 13 inherently comprises a computer readable medium having computer readable program code embodied therein to carry out the above-cited functions. Therefore, Keller also teaches Claim 41.

Claim Rejections - 35 USC § 103

2. Claims 21-23 and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keller et al. (US patent application publication 2002/0102028) in view of Morris et al. (US patent 5,153,936 cited previously.)

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As discussed above with regard to Claims 1-4, 11-12, and 14-19, 30-36, and 38-40, Keller teaches a method and system of managing storage size of an image of an object, wherein the image is accessed by a user, the method comprising the steps of:

- reducing the storage size of the image based on reduction criteria to create a size-reduced version, the size-reduced version replacing the image;
- wherein the step of reducing includes compressing the image;
- wherein the image is in a compressed format and the step of reducing includes achieving more compression;
- wherein an initial step of reducing includes deleting a portion of the image;
- wherein the reduction criteria includes at least one of: available data storage, time since object creation, time since object imaging, prior size-reduction, prior access by user, object value, user account type, volume of objects per user account, user total account value, user selections, user fees paid, user account history, suspicious activity and object side imaged;
- maintaining a substantially lossless quality version of the image;
- allowing the user to access the substantially lossless quality version upon request;
- wherein a final step of reducing includes purging the image.

Keller teaches that the method further comprises:

- allowing user access to the original image data from the high readout-speed capable storage medium for a predetermined duration, wherein (1) when the original image data are required, the original image data are copied from archive to temporary storage medium 11 and (2) in one situation, the original image is converted to a reversibly-compressed image version as taught in 0061. (sections 0060-0061 and 0070-0072)

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However, Keller does not explicitly teach the steps of allowing and repeating recited in Claim 21.

Morris teaches:

-- allowing user access to a size-reduced version for a predetermined duration; (column 7, lines 11-50)

-- repeating steps of reducing and allowing after expiration of the predetermined duration. (column 9, lines 37-53)

It is desirable to release memory of high readout-speed capable storage medium for storing new data in high readout-speed capable storage medium by deleting data that have not been generated for an aging period. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Morris' teaching to delete Keller's image data S1 and S2 from the high readout-speed capable storage medium and regenerate the S1 and S2 upon request after the predetermined period, because the combination makes better use of the high readout-speed capable storage medium. The combination thus teaches the steps of:

-- allowing user access to the size-reduced version for a predetermined duration;

-- repeating the steps of reducing and allowing after expiration of the predetermined duration, wherein each reduction replaces a previous size-reduced version. (The combination teaches that after a predetermined duration the image data stored in the temporary storage medium 11 are deleted as taught by Keller in sections 0070-0072, wherein (1) when the original image data are required again later as taught by Morris, the original image data are copied from archive to temporary storage medium 11 as taught by Keller and (2) in one situation, the original image is converted to a reversibly-compressed and irreversibly-compressed image versions as

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taught in 0061 as taught by Keller in sections 0060-0061. It is evidently after each selection and new request, a set of new image data versions replace their corresponding deleted versions.)

3. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keller et al. (US patent application publication 2002/0102028) applied to Claim 1 as discussed above, and further in view of Ishida (Japanese patent JP 09181892 A in IDS filed on 8/24/2001.)

Keller teaches the parent Claim 1 as discussed above. However, Keller does not teach the feature related to statistical data recited in Claim 20.

Ishida teaches a document storage and retrieval system and method, comprising:

-- maintaining statistical data for comparison with a criterion for compressing image data. (Figs. 3-4 and the attached English summary; The data are discriminated to be whether frequently used or not. This discrimination inherently needs statistical data of the number of usage.)

It is desirable to speed up image retrieval and display. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Ishida's teaching to maintain statistical data of the number of usage of Keller's image as a criterion for deciding data reduction, because the combination speeds up image retrieval and display of frequently-used images. The combination thus teaches the step of:

-- maintaining statistical data for comparison with the reduction criteria.

4. Claims 5-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keller et al. (US patent application publication 2002/0102028) applied to Claim 1 as discussed above, and further in view of Takayama (US patent 5,970,176 cited previously.)

Keller teaches the parent Claim 1 as discussed above. Keller further teaches:

-- wherein the compressed format is a JPEG baseline compression format; (section 0029; JPEG and progressively expandable compression are used in different embodiments. Therefore, one approach uses a JPEG baseline compression format.)

-- wherein a first secondary level exhibits lower image quality compared to the base level and a second secondary level exhibits lower image quality compared to the first secondary level; (sections 0061-0065)

-- wherein the at least two secondary levels includes at least three secondary levels; and a third secondary level exhibits lower image quality compared to the second secondary level. (section 0061; claim 1; There are uncompressed original image data, reversible compressed image data and S1 and S2 irreversible compressed image data. Quality of S2 is lower than that of S1.)

However, Keller does not teach the feature related to different Q-tables recited in the listed claims.

Takayama teaches a method and system for generating image data of various compressed levels for network communication, comprising:

-- using JPEG compression; (Fig. 4)

-- wherein a base level is a compressed format and each secondary level has a different Q-table than the base level and the at least one secondary level includes at least two secondary

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levels, each secondary level having a different Q-table than every other secondary level. (column 3, lines 25-63; Fig. 6A1; Three Q-tables that are fine, standard, and course are used for various compression levels.)

It is desirable to have flexibility of generating image data of various compression levels. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Takayama's teaching to quantize Keller's image with different Q-tables for generating image data of various levels, because the combination provides flexibility of generating image data of various compression levels.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Keller et al. (US patent application publication 2002/0102028) and Takayama (US patent 5,970,176) applied to Claim 5 as discussed above, and further in view of Sato et al. (US patent application publication 20020003905 cited previously.)

The combination of Keller and Takayama teaches the parent Claim 5 as discussed above.

However, the combination does not teach the feature related to JPEG2000 recited in the listed claim.

Sato teaches image compression for file management comprising the feature:

-- wherein the compressed format is a JPEG 2000 compression format. (sections 82 and 245)

It is desirable to have flexibility of controlling, transmitting, and displaying compressed image data over various systems. It is well known JPEG 2000 compression provides such flexibility. It would have been obvious to one of ordinary skill in the art, at the time of the

invention, to extend Sato's JPEG2000 compression to compress Keller's image, because the combination provides the above-stated flexibility.

6. Claims 13 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keller et al. (US patent application publication 2002/0102028) applied to Claims 1 and 30 as discussed above, and further in view of Takayama (US patent 5,970,176) and Christopoulos et al. (US patent 6,526,099 cited previously.)

Keller teaches the parent Claims 1 and 30 as discussed above.

However, Keller does not teach the feature related to decoding compressed data, Q-tables, and recoding recited in the listed claims.

Takayama teaches selecting various Q-tables as discussed above. The advantage of combining Keller's and Takayama's teachings is also provided above.

However, the combination of Keller and Takayama does not teach the feature related to decoding compressed data and recoding recited in the listed claims.

Christopoulos teaches transcoding of compressed image data comprising the feature:

-- wherein the image is in a compressed format and the step of reducing includes entropy decoding the image, changing quantized coefficients and quantization tables, and entropy recoding the image. (Fig. 1; column 16, lines 31-52; VLD in Fig. 1 is entropy decoding. VLC₄ in Fig. 1 is entropy recoding. Quantization is change from Q₁ to Q₂,

It is desirable to be able to reprocess existed compressed medical image for improving image retrieval. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to extend Christopoulos' transcoding approach to recompress images in the system and

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method taught by the combination of Keller and Takayama, because the combination improves image retrieval.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Keller and Morris applied to Claim 23 as discussed above, and further in view of Takayama (US patent 5,970,176) and Christopoulos et al. (US patent 6526099.)

The combination of Keller and Morris teaches the parent Claim 23 as discussed above.

However, the combination does not teach the feature related to decoding compressed data, Q-tables, and recoding recited in the listed claim.

Takayama teaches selecting various Q-tables as discussed above. The advantage of combining Keller's and Takayama's teachings is also provided above. Similar combination and advantage are also applied to the combination of Keller, Morris, and Takayama.

However, the combination of Keller, Morris, and Takayama does not teach the feature related to decoding compressed data and recoding recited in the listed claims.

Christopoulos teaches transcoding of compressed image data comprising the feature:

-- wherein the image is in a compressed format and the step of reducing includes entropy decoding the image, changing quantized coefficients and quantization tables, and entropy recoding the image. (Fig. 1; column 16, lines 31-52; VLD in Fig. 1 is entropy decoding. VLC₄ in Fig. 1 is entropy recoding. Quantization is change from Q₁ to Q₂,

It is desirable to be able to reprocess existed compressed medical image for improving image retrieval. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to extend Christopoulos' transcoding approach to recompress images in the system and

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method taught by the combination of Keller, Morris, and Takayama, because the combination improves image retrieval.

(10) Response to Argument

1. Overview of Examiner's rejection with regard to the limitation of "replacing the image with a size-reduced image version such that the size-reduced image version is the only version of the image stored in the database".

Evident from the Appellants' arguments in the Appeal brief, the point at issue is the limitation of "replacing the image with a size-reduced image version such that *the size-reduced image version is the only version of the image stored in the database*". More specifically, it is above-highlighted portion. Appellants' arguments for appealing to the Board to reverse the Examiner's rejections all center on whether Keller teaches this limitation.

Accordingly, the Examiner likes to answer this question at first and show Keller indeed teaches this limitation. Keller teaches that image server 1 receives from input modality 4 an original image data S org. (lines 2-4 in paragraph 0061) It is known in the art and also shown in Keller's paragraph 0004 that input modality 4 generates raw and non-compressed image data, such as computed radiography (CR) generating raw CR image. The S org image data is thus not compressed. The S org is then compressed for storage in medium 11. Keller teaches in paragraph 0061 three distinct approaches to store the image data:

(A) In the first approach, S org and compressed image data S1 and S2 are stored in medium 11. (lines 10-12 in paragraph 0061)

(B) In the second approach, *the S org is compressed into a reversible compressed image data and stored in medium 11 in place of S org. In this approach, the reversible compressed image data and compressed image data S1 and S2 are stored in medium 11.* (lines 12-16 in paragraph 0061)

(C) In the third approach, S org and compressed images data S1 and S2 are stored in medium 11 and S org is stored in archive 12 at the same time . (lines 16-19 in paragraph 0061)

It is the second approach that meets all the limitations of Claims 1, 30, 39 and 41.

It is also important to know how the Examiner interprets the term “version” in the limitation “the size-reduced image version is the only version”. A version without specific definition can be interpreted very broadly. **A version of image data can be defined by whether they are compressed or not. Because a compressed version of image data is a version having data size smaller than the original image data, it is a size-reduced version. The Examiner considers that Keller's image data are classified into original image data to be non-size-reduced image version and compressed image data to be size-reduced image version. Although Keller teaches compressed image data of several compression ratios, all the compressed image data of the several compression ratios belong to the same version, namely the size-reduced image version. The Appellants may intend to the size associated with different degrees of compression for classification version of an image data. However, this intension is silent in the claim language. The term “version” is not specifically defined to prevent the Examiner to make his above-mentioned interpretation.**

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Let us analyze Claim 1 in more details as an example. Keller teaches a method as recited in Claim 1 of the present application for managing an image of an object stored in a database, the method comprising the steps of:

-- reducing a storage size of the image from a base level to at least one secondary level based on the reduction criteria, wherein each secondary level is smaller in storage size than the base level; (paragraphs 0061-0065, 0077, 0092; As discussed above, S_{org} is an image data at a base level (without compression). Compression process reduces the storage size of S_{org} to at least one secondary level including the reversible compressed image data and compressed image data S₁ and S₂. The data size of reversible compressed image data is smaller than that of S_{org} with an actual compression ratio depending on the characteristics of S_{org}. Image data S₁ and S₂ have sizes of 1/20 and 1/50 of that of S_{org}, respectively.)

-- wherein the step of reducing includes replacing the image with a size-reduced image version, such that the size-reduced image version is the only version of the image stored in the database. (paragraph 0061, As explained with regard to the second approach mentioned above, the original image is reversibly compressed and is replaced by the reversibly compressed image. A reversibly compressed image has smaller size of data than that of the original image and is thus a size-reduced image version. Data S₁ and S₂ are also compressed. *The reversibly compressed image, image data S₁, and S₂ are all of a size-reduced image version. For the second approach, only the reversibly compressed image, image data S₁, and S₂ are stored in storage medium 11. The data stored in medium 11 form a set of database. When S_{org} is replaced with the reversible compressed image data, the S_{org} disappears from medium 11. All the image data stored in medium 11 are of only version of compressed image data, namely the*

size-reduced version. Therefore, Keller teaches the limitation -- the size-reduced image version is the only version of the image stored in the database.)

2. Point by point responses

(A) Whether Keller anticipates the subject matter recited in claims 1-4, 11-12, 14-19, 30-36, 38-39, and 41

(a) Appellants' argument for Claims 1, 30, 39 and 41 --

In the present patent application, claims 1, 30, 39 and 41 recite "the limitation of replacing the image with a size-reduced image version such that the size-reduced image version is the only version of the image stored in the database" (hereafter referred as **feature A**). Keller does not teach having a size-reduced image version that is the only version of the image stored in a database. No matter how the storage capabilities of the image server 1 of Keller are interpreted; the temporary storage medium 11 on its own, the archive 12 on its own or the combination of both the temporary storage medium and the archive, none anticipate the claim limitation of having a size-reduced image version that is the only version of the image stored in the database. In particular, the temporary storage medium 11 stores three size-reduced images of the image S, the archive 12 stores S but it is not in a compressed state, and the combination of the temporary storage medium and archive store a total of four images.

Examiner's answer -- In second paragraph, page 9 of the present Appeal Brief, the Appellants agree that Kelley teaches that "the temporary storage medium 11 stores three size-reduced images of the image S". The three size-reduced images of the image S are all of

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compression (reduced-data-size) version as discussed above in section (10) 1 “Overview of Examiner’s rejection ...” above. To negate the teaching of “three size-reduced images of the image S” as “the size-reduced image version being the only version of the image stored in the database” in the argument, the Appellants implicitly requires using size of data for classifying version of an image data to make the three images as different versions. **However, the broad language of representative Claim 1 does not require such limitation. The Appellants are impermissibly reading limitations from the specification into the claims. The language of all Claims 1, 30, 39 and 41 broadly and reasonably reads on version classified by whether image data are compressed (size reduced) or non-compressed (size not reduced) versions.**

(b) Appellants' argument for Claims 2-4, 11-12, 14-19, 31-36 and 38 --

Claims 2-4, 11-12, 14-19; and 31-36, 38 depend directly or indirectly from presumably allowable claims 1 and 30, respectively, and thus are in allowable condition by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The combination of Keller in view of Morris therefore also teaches the feature. The Appellants' argument is invalid.

(B) Whether claims 21-23 and 25-29 under 35 USC §103(a) are patentable over the combination of Keller in view of Morris

Appellants' argument -- The combination of Keller in view of Morris does not disclose or suggest claims 21-23 and 25-29.

(a) Appellants' argument for Claim 21

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Claim 21, like claims 1, 30, 39 and 41 the limitation of replacing the image with a size-reduced image version such that the size-reduced image version is the only version of the image stored in the database. Morris provides no teachings, hints or motivations that suggest the desirability of replacing an image with a size-reduced image version such that the size-reduced image version is the only version of the image stored in the database. Since Keller and Morris do not disclose or suggest replacing an image with a size-reduced image version such that the size-reduced image version is the only version of the image stored in the database, Appellant submits that the combination of Keller in view of Morris does not disclose or suggest this limitation.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The combination of Keller in view of Morris therefore also teaches the feature. The Appellants' argument is invalid.

(b) Appellants' argument for Claims 22-23 and 25-29

Claims 22-23 and 25-29 depend from presumably allowable claim 21, and thus Appellant submits that these claims are allowable by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The combination of Keller in view of Morris therefore also teaches the feature. The Appellants' argument is invalid.

C. Whether claim 20 under 35 USC §103(a) is patentable over the combination of Keller in view of Ishida

Appellants' argument -- The combination of Keller in view of Ishida does not disclose or suggest claim 20. Claim 1 is allowable because Keller does not teach feature A. Ishida does not

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remedy this deficiency. Claim 20, depending from presumably allowable claim 1, is thus allowable by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The Appellants' argument is invalid.

D. Whether claims 5-6 and 8-10 under 35 USC §103(a) are patentable over the combination of Keller applied to claim 1, and further in view of Takayama

Appellants' argument -- The combination of Keller in view of Takayama does not disclose or suggest claims 5-6 and 8-10. Claim 1 is allowable because Keller does not teach the feature of feature A. Takayama does not remedy this deficiency. Claims 5-6 and 8-10, depending from presumably allowable claim 1, is thus allowable by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The Appellants' argument is invalid.

E. Whether claim 7 under 35 USC §103(a) is patentable over the combination of Keller and Takayama as applied to claim 5, and further in view of Sato et al. (Sato)

Appellants' argument -- The combination of Keller and Takayama in view of Sato does not disclose or suggest claim 7. Claim 1 is allowable because Keller does not teach feature A. Takayama and Sato do not remedy this deficiency. Claim 7, depending from presumably allowable claims 1 and 5, is thus allowable by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The Appellants' argument is invalid.

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F. Whether claims 13 and 37 under 35 USC §103(a) are patentable over the combination of Keller as applied to claims 1 and 30, and further in view of Takayama and Christopoulos

Appellants' argument -- The combination of Keller in view of Takayama and Christopoulos does not disclose or suggest claim 13 and 17. Claims 1 and 30 are allowable because Keller does not teach feature A. Takayama and Christopoulos do not remedy this deficiency. Claims 13 and 37, depending from presumably allowable claims 1 and 5, are thus allowable by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The Appellants' argument is invalid.

G. Whether claim 24 under 35 USC §103(a) is patentable over the combination of Keller and Morris as applied to claim 23 and further in view of Takayama and Christopoulos

Appellants' argument -- The combination of Keller and Morris in view of Takayama and Christopoulos does not disclose or suggest claim 24. Claim 21 is allowable because Keller does not teach feature A. Morris, Takayama and Christopoulos do not remedy this deficiency. Claim 24, depending from presumably allowable claims 21 and 23, are thus allowable by dependency.

Examiner's answer -- As discussed above, Keller indeed teaches feature A. The Appellants' argument is invalid.

(11) Related Proceeding(s) Appendix

Art Unit: 2624

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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